UPDATE ON EPA'S PROGRESS IN REEVALUATING FIVE SIGNIFICANT STANDARDS THAT AFFECT CHILDREN'S HEALTH

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In 1996 EPA issued the report *Environmental Health Threats to Children* which included a *National Agenda to Protect Children's Health from Environmental Threats*. In the first element of the National Agenda, EPA committed to "ensure, as a matter of national policy, that all standards EPA sets are protective enough to address the potentially heightened risks faced by children—so as to prevent environmental health threats wherever possible—and that the most significant current standards be reevaluated as we learn more." EPA promised to select five of its most significant public health and environmental standards to reevaluate. In October 1997, EPA requested public comment regarding which standards should be reviewed (65 FR 51854). EPA received 18 public comments suggesting standards for review.

EPA established the Children's Health Protection Advisory Committee (CHPAC) in

September 1997 and requested that, as one of its first actions, CHPAC develop recommendations on what standards to review. After review of the public comments and extensive deliberations, CHPAC issued its recommendations in May 1998. In February 1999, EPA largely accepted

CHPAC's recommendations (64 FR 5277). EPA agreed to the following:

To analyze the risks to children of mercury emissions from chloralkali plants as part of the rulemaking to review the National Emissions Standard for Hazard Air Pollutants (NESHAP) for such plants and to continue other activities to reduce mercury risks to children;

To reevaluate pesticide tolerances for chlorpyrifos, dimethoate, and methyl parathion;

 To reevaluate the drinking water Maximum Contaminant Level and pesticide tolerance for atrazine;

 To review the implementation and enforcement of the Worker Protection Standard for agricultural workers and pesticide handlers; and

 To take a fully integrated approach to address indoor and ambient air quality factors that contribute to childhood asthma.

The following sections discuss each of the five regulatory areas. Each section describes background information on the standard and risks to children, EPA's specific commitment to reevaluation, and EPA's progress to date.

¹ "Report of the Children's Health Protection Advisory Committee to the U.S. Environmental Protection Agency Regarding the Selection of Five Regulations for Re-Evaluation," May 28, 1998.

The primary pollutant of concern from chloralkali plants is mercury, which has known adverse human health effects, particularly in children. The NESHAP for chloralkali plants was established in 1973 and has not been adjusted since its promulgation. EPA agreed to CHPAC's

recommendation to review this particular regulation because (1) the standard had not been reevaluated since its promulgation in 1973, (2) children's health was not considered in the development of the standard, and (3) new information has become available on the risks of mercury exposure in children. EPA also agreed to continue work with respect to CHPAC's three other recommendations regarding mercury emissions:

Holistic Approach: EPA should take a holistic approach in evaluating all sources of mercury in the environment. Mercury enters the environment through a variety of sources and impacts multiple media.

EPA's Commitment: "To ensure protection of children, the OAR [Office of Air and Radiation] will analyze the risk from chloralkali plants to support the rule making." EPA also will continue work on the CHPAC's three other recommended areas for reducing mercury emissions: holistic approach, water quality criteria and standard, and electric utility boilers.

- Mercury Water Quality Criteria and Standard: EPA should address the largest sources of mercury emissions to prevent further contamination of fish by revising the Water Quality Criteria and Standard. Mercury bioaccumulates in fish, which is the primary pathway for human exposure.
- Electric Utility Boilers: EPA should evaluate the regulation of mercury emissions from electric (coal-burning) utility boilers. These sources were not regulated at the time of CHPAC's recommendations and are the largest single anthropogenic source of mercury emissions.²

Chloralkali Plant NESHAP: To ensure the protection of children, OAR committed to analyze the risk to children from chloralkali plants as part of developing a rulemaking to revise the emissions limits. In making this commitment, OAR believed that a risk assessment would provide information on potential children's risks that would be helpful in determining the appropriate level of the standard.

As promised, EPA considered the impacts on children in developing a proposed rule for chloralkali plant mercury emissions. The proposed standard was published on July 3, 2002 (67 FR 44672). The proposed revisions would result in the greatest emissions reductions that are consistent with section 112(d) of the Clean Air Act and that are technically and economically feasible under current conditions. The proposed standard is estimated to reduce nationwide

² EPA, "Mercury Study Report to Congress," 1997.

mercury emissions from chloralkali plants by 1,500 pounds per year, compared to the levels released under the existing NESHAP, according to the *Federal Register* notice. EPA expects to publish the chloralkali plant NESHAP final rule in August 2003.

Holistic Approach: EPA issued a draft Multimedia Strategy for Priority Persistent, Bioaccumulative, and Toxic Pollutants in November 1998, which addressed the recommendation that EPA take a holistic approach to controlling human exposure to mercury. The strategy considers mercury in air, water, sediment, and on the land. Consistent with the strategy, EPA actions to reduce mercury risks have included the following:

- Final rules for new and existing small municipal waste combustors issued in December 2000 that will reduce mercury emissions from municipal waste combustors and medical waste incinerators by 50 percent from 1990 levels (65 FR 76349 and 76377, respectively).
- A partnership with the American Hospital Association to eliminate hospital mercury waste by the year 2005.
- A final rule for hazardous waste combustion facilities in September 1999 that substantially reduces mercury emissions (64 FR 52828).
- Mercury emissions guidelines, published in December 2000, for industrial and commercial non-hazardous solid waste combustors (65 FR 75388).

Mercury Water Quality Criteria and Standard: In 1998 EPA's Office of Water accelerated its development of a revised water quality human health criterion for mercury. On January 8, 2001, EPA published a recommended water quality criterion for methylmercury (66 FR 1344) and withdrew its previous, less stringent, ambient human health water quality criteria for mercury as the recommended Clean Water Act section 304(a) water quality criteria. The new water quality criterion describes the concentration of methylmercury in freshwater and estuarine fish and shellfish tissue that should not be exceeded to protect consumers of fish and shellfish among the general population. EPA expects the criterion recommendation to be used as guidance by states, tribes, and EPA in establishing or updating water quality standards for waters of the United States and in issuing fish and shellfish consumption advisories. The new criterion was the first water quality criterion expressed as a fish and shellfish tissue value rather than as a water column value. The approach is a direct consequence of the scientific consensus that consumption of contaminated fish and shellfish is the primary human route of exposure to methylmercury.

Electric Utility Boilers: To support a regulatory action on mercury emissions from electric (coal-burning) utility boilers, EPA gathered emissions data about coal-fired electric generating plants. In December 2000 EPA determined that regulation of hazardous air pollutants, including mercury, from oil and coal-fired electric utility steam generating units was necessary and appropriate (65 FR 79825). EPA expects to publish a proposed rule in December 2003 and a final rule in December 2004.

3. Pesticide Tolerances for Organophosphates

EPA agreed to review pesticide tolerances for three organophosphate pesticides: chlorpyrifos, dimethoate, and methyl parathion. These three pesticides were selected because they represent the majority of the dietary risk from organophosphate pesticides to children. Also, when these pesticide tolerances were developed, children's differential exposures and children's unique susceptibilities were not fully evaluated. EPA's progress in evaluating these pesticide tolerances is described below. EPA's next step under the Food Quality Protection Act (FQPA), after reviewing all of the organophosphate pesticide tolerances, is to complete a cumulative risk assessment and risk management decision

encompassing all the organophosphate pesticides, which share a common mechanism of toxicity. The interim decisions on these pesticides cannot be considered final until the cumulative assessment is complete because further risk mitigation may be warranted.

EPA's Commitment: To reevaluate the pesticide tolerances for chlorpyrifos, dimethoate, and methyl parathion.

Chlorpyrifos. Prior to EPA's evaluation and risk mitigation, chlorpyrifos was one of the most widely used organophosphate insecticides in the United States. The primary uses of chlorpyrifos were agricultural settings, non-agricultural settings, such as homes, office buildings, schools, and warehouses, and termiticide treatment. Chlorpyrifos has been used on more than 40 different agricultural crops, including strawberries, citrus, apples, pears, cherries, peaches, plums, grapes, nuts, broccoli, asparagus, tomatoes, and bananas. Chlorpyrifos also was used in homes and other non-agricultural settings, including use as a termiticide, treatment of lawns, ornamentals, and inside buildings. Organophosphate pesticides, such as chlorpyrifos, can cause cholinesterase inhibition in humans, which results in an overstimulation of the nervous system causing nausea, dizziness, confusion, and, at very high exposures, respiratory paralysis and death.

EPA has taken a number of actions to reduce children's health risks associated with chlorpyrifos. In June 2000 EPA and registrants of pesticide products containing chlorpyrifos signed an agreement to take voluntary measures to reduce the potential exposure of children to chlorpyrifos. The agreement included measures directed at reducing the greatest exposure to children by cancelling nearly all indoor and outdoor residential uses, including the post-construction termiticide use, which also reduced risk associated with drinking water, limiting the use on apples, and cancelling the use on tomatoes.

Also in June 2000, EPA issued the "Revised Human Health Risk Assessment for Chlorpyrifos" and the "Revised Environmental Fate and Effects Division Risk Assessment for the Reregistration Eligibility Decision on Chlorpyrifos." The risk assessment considered the differential exposure and unique susceptibilities of children and concluded that the FQPA safety factor should be retained at 10X. The FQPA safety factor is applicable to females 13-50 and infants and children. The risk assessment included an analysis of the voluntary measures mentioned above and concluded that the voluntary actions would reduce aggregate (not just dietary) risk to infants and children below the level of concern.

Since the signing of the chlorpyrifos agreement in June 2000, EPA has published four cancellation orders that deleted uses and cancelled products containing chlorpyrifos that were the subject of the June 2000 agreement. As a result of these four cancellation orders, 418 products have been canceled and 187 products have had their labels modified to delete uses to be consistent with the June 2000 agreement.

On September 28, 2001, EPA issued its Interim Reregistration Eligibility Decision (IRED) for chlorpyrifos. The IRED focused on the risks remaining after implementation of the June 2000 agreement. The IRED concluded that the FQPA ten-fold safety factor should be retained for infants and children for all exposure durations. Children of age one to six were determined to be the most sensitive population subgroup. Maintaining the ten-fold safety factor will continue to minimize the risks to children from chlorpyrifos use.

Dimethoate. Dimethoate is a systemic organophosphate insecticide primarily used on a variety of field and orchard agricultural crops and ornamentals. Dimethoate is a general use chemical that is applied using ground and aerial application equipment. The crop uses for dimethoate include apples, asparagus, broccoli, cherries, grapes, grapefruit, lettuce, oranges, pears, potatoes, spinach, and watermelon. Organophosphate pesticides, such as dimethoate, can cause cholinesterase inhibition in humans, which results in an overstimulation of the nervous system causing nausea, dizziness, confusion, and, at very high exposures, respiratory paralysis and death.

Since 1998, EPA has taken a number of actions to reduce children's health risks associated with dimethoate. In December 1999, EPA issued a "Revised Health Effects Assessment" for dimethoate. The Assessment considered the differential exposure and unique susceptibilities of children. The Agency plans on issuing an IRED for dimethoate by the end of 2003. The Hazard Identification Assessment Review Committee (HIARC) and the FQPA Safety Factor Committee determined that for dimethoate, the ten-fold factor used to account for enhanced sensitivity of infants and children (as required by the FQPA) should be removed. This conclusion was based on the developmental and reproductive toxicity studies in the toxicology database for dimethoate, which clearly defined the effects, and a no observed effect level (NOEL).

On September 11, 2001, EPA announced the discontinued use of dimethoate on cabbage (bok choy and kohlrabi) because of dietary concerns from dimethoate residues (66 FR 47217). The registrants of products containing dimethoate requested that EPA delete these uses from their registrations.

On January 10, 2002, EPA announced that the Agency had received requests from registrants for voluntary cancellation and amendment of their dimethoate end-use product registrations to terminate all indoor uses, certain agricultural uses, and certain outdoor non-agricultural uses (67 FR 1345). On March 13, 2002, EPA published a cancellation order and label amendments for dimethoate end-use products in response to the requests from registrants published on January 10, 2002 (67 FR 11330). The cancellation order removed all residential and

public building uses, including areas around these buildings, and certain agricultural uses. These actions will reduce children's exposure to dimethoate.

Methyl Parathion. Methyl parathion is a restricted-use pesticide that is applied aerially and by ground application methods on a variety of field and orchard agricultural crops. Methyl parathion was used on agricultural crops, including almonds, apples, artichokes, broccoli, cabbage, canola, carrots, cherries, corn, grapes, hops, lettuce, nectarines, oats, onions, peaches, pears, pecans, plums, rice, spinach, succulent beans and peas, sweet potatoes, tomatoes, walnuts, wheat, and white potatoes. Organophosphate pesticides, such as methyl parathion, can cause cholinesterase inhibition in humans, which results in an overstimulation of the nervous system causing nausea, dizziness, confusion, and at very high exposures, respiratory paralysis and death.

In August 1999, EPA issued a "Revised Health Effects Assessment" (RHEA) for methyl parathion. The RHEA considered the differential exposure and unique susceptibilities of children and concluded that children one to six years of age were the most highly exposed population subgroup with respect to dietary risk. The Assessment included an analysis of the voluntary measures mentioned below and concluded that the voluntary actions would reduce the dietary risk to infants and children below the level of concern. In August 1999, EPA also accepted voluntary cancellation of uses of methyl parathion on crops that contributed most to children's diet. The cancelled uses represent 90 percent of the dietary risk to children and reduce the acute dietary risk from food to below levels of concern. The cancelled food uses include apples, artichokes, broccoli, carrots, cherries, grapes, lettuce, nectarines, peaches, pears, plums, succulent beans and peas, and tomatoes. The methyl parathion tolerances associated with these foods were revoked on January 5, 2001.

4. Atrazine Tolerance and Maximum Contaminant Level (MCL)

EPA agreed to reevaluate the atrazine drinking water MCL and to review the atrazine pesticide tolerance. Atrazine is one of the most widely used agricultural herbicides in the United States. The primary agricultural uses for atrazine are on corn, sugarcane, sorghum, and some

minor crops including guava, hay, macadamia nuts, pasture, and winter wheat. Non-agricultural uses include golf courses, rangeland, residential lawns, Christmas trees, landscape maintenance, forests, recreational areas, and rights of way. Atrazine has been linked to adverse health effects, such as the disruption of reproductive and developmental processes, and has been detected in drinking water in

EPA's Commitment: To reevaluate the atrazine pesticide tolerance and MCL in drinking water.

the Midwest and other parts of the country. When EPA established the atrazine tolerance and drinking water MCL, children's differential exposures were not considered and children's unique susceptibilities were not fully evaluated. New information has become available since the tolerance and MCL were established that allow for a more complete evaluation of the health effects of atrazine on children.

In January 2003, EPA issued its IRED for atrazine. The IRED considered the differential exposures and unique susceptibilities of children and recommends maintaining the FQPA tenfold safety factor for dietary and drinking water exposures to atrazine based on concerns about developmental effects and uncertainties and limitations in available monitoring data. For drinking water concerns where reliable, frequent monitoring data are available, the FQPA safety factor was reduced to three-fold. For residential risks, the FQPA safety factor was reduced to three-fold based solely on concerns about developmental effects. Maintaining the FQPA safety factors will protect children from the risks of atrazine use. The IRED identifies risk mitigation measures that EPA believes are necessary to address human health and environmental risks. The risk mitigation measures most relevant for children include the following:

- The establishment of an intensive monitoring program for approximately 150 vulnerable surface water community water systems (CWS);
- For eight highly vulnerable water systems, if atrazine is detected above the Drinking Water Level of Concern, atrazine use in that watershed will be prohibited;
- If atrazine is detected above the Drinking Water Level of Concern or at or above the MCL in any other CWS being frequently monitored, site-specific mitigation plans will be implemented. A second incidence of atrazine above the Drinking Water Level of Concern will lead to a prohibition on atrazine use in the watershed;
- Reduction in lawn application rates for liquid formulations; and
- A requirement that granular lawn formulations be watered in.

In the spring of 2003, EPA completed the evaluation of 17 laboratory and field studies regarding potential effects of the herbicide atrazine on amphibian development. EPA developed a "white paper" that assesses the strengths and limitations of these studies. Based on its review, EPA has developed a conceptual model to address uncertainties in determining a causal relationship between atrazine exposure and amphibious development. On May 29, 2003, EPA submitted the white paper to a Science Advisory Panel (SAP) for review. The SAP met June 17 through June 19 to discuss the paper. EPA will consider the SAP's comments, expected in August 2003, when the Agency issues a revised IRED for atrazine in October 2003.

EPA has not modified the atrazine drinking water MCL of 3.0 parts per billion that was established in 1991. The atrazine MCL will be reevaluated as part of EPA's National Primary Drinking Water Standards six-year review of regulated contaminants. EPA's Office of Water has been aware of the ongoing reregistration review and will consider the Office of Pesticide Program's atrazine risk assessment as part of the MCL review.

5. Farm Worker Protection Standard (WPS)

The CHPAC recommended that EPA review pesticide exposures to children in establishing the WPS for agricultural workers and pesticide handlers. Under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), EPA has the authority to address childhood and prenatal exposures to pesticides through worker protection requirements including labeling, reentry intervals, personal protective equipment,

worker education and training, and posting and signs. EPA committed to reevaluate the implementation and enforcement of the Worker Protection Standard.

EPA's Commitment: To reevaluate the implementation and enforcement of the farm WPS.

EPA has taken several actions with regard to
WPS implementation and enforcement. EPA has
issued a four-part strategy to minimize the impact of pesticide exposure on children below the
age of 12 who work in agriculture or are otherwise present in pesticide-treated fields. The
strategy includes:

- Enhancing enforcement of worker protection regulations;
- Improving education of farm workers and their families, farm managers, and primary health care providers about the use and effects of pesticides;
- Developing better data to more definitively characterize the magnitude of children's exposures; and
- Implementing risk assessment methods to assist EPA in making risk management decisions for children in agricultural areas.

To improve EPA's oversight of state implementation and enforcement of the WPS, EPA has initiated several actions:

- EPA launched a national assessment of the worker protection program that included three national stakeholder meetings. The national assessment is intended to determine if the WPS program is adequately meeting its intended goals of addressing the risks to agricultural workers, including children working in agriculture.
- EPA's Office of Enforcement and Compliance Assurance initiated a national review of the enforcement and compliance components of the WPS program.
- In negotiating cooperative agreements with states, EPA began to negotiate improvements in WPS implementation and enforcement in 2000.

• In 2000 EPA funded the Young Farmworkers' Academy that provided 55 children of migrant workers with an increased awareness of organic gardening, pesticide safety, and other topics.

The national assessment of the worker protection program, called the Agricultural Worker Protection Program National Assessment and Pesticide Worker Safety Workshops, held the fourth and final workshop in March 2003 in Arlington, Virginia. Previous workshops were been held in June 2000 in Austin, Texas, December 2000 in Sacramento, California, and July 2001 in Buena Vista, Florida. These meetings included recommendations that EPA take the following actions:

- Improve communication to agricultural workers on the hazards of pesticides;
- Improve pesticide safety training for agricultural workers;
- Establish a hotline for WPS information and enforcement; and
- Improve overall communications between federal, state, local, and non-governmental entities that service agricultural workers.

EPA has initiated action on each of the above items as of 2002. As of the date of this report the results from the final workshop in March 2003 were not available.

6. Air Quality and Asthma

As recommended by CHPAC, EPA committed to taking a fully integrated approach to address indoor and ambient air quality factors that contribute to childhood asthma, one of the most significant children's environmental health problems. Rather than focusing on a specific standard to review, EPA agreed to conduct a

EPA's Commitment: To take a fully integrated approach to address indoor and ambient air quality factors that contribute to childhood asthma.

holistic review of outdoor and indoor air quality. One of the aspects of Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risk, was the creation of a President's Task Force on Children's Health. One of the priorities of the Task Force is addressing asthma, specifically developing a further understanding of the role of environmental factors associated with the onset of asthma and the triggers of asthma attacks. The Task Force developed four recommendations for federal action.

- 1. Strengthen and accelerate focused research into the environmental factors that cause or worsen childhood asthma;
- 2. Implement public health programs that improve use of scientific knowledge to prevent and reduce the severity of asthma symptoms by reducing environmental exposures;

324 325 326	3.	Establish a coordinated nationwide asthma surveillance system for collecting, analyzing, and disseminating health outcome and risk factor data at the state, regional and local levels; and
327 328	4.	Identify the reasons for and eliminate the disproportionate burden of asthma among different racial and ethnic groups and those living in poverty.

The following discussion is divided into sections on indoor air and ambient air quality.

Indoor Air Quality

EPA, along with other federal agencies, is developing a comprehensive inter-agency action plan to address asthma. For example, EPA is collaborating with experts from the Department of Health and Human Services and the Department of Housing and Urban Development to develop ways to address indoor air asthma triggers. Through this collaboration, EPA has developed and promoted a variety of voluntary indoor air quality efforts to reduce the risk of asthma in children. For example, EPA supported the National Institutes of Health in launching the National Asthma Public Education and Prevention Program which strives to raise public awareness of indoor environmental asthma triggers and actions to reduce children's exposure to these triggers in homes, schools, and child care settings.

In conjunction with the Advertising Council,³ EPA has developed "The Childhood Asthma Campaign." Based on the success of this public outreach effort, EPA and the Advertising Council released a second asthma campaign in May 2003. EPA also is collaborating with a network of non-profit groups and government agencies to prevent asthma by identifying asthma triggers and raising public awareness of them. For example, EPA has partnered with:

- American Academy of Allergy, Asthma and Immunology (AAAAI) to promote the Smoke-free Home Pledge Initiative via a web site and by distributing Smoke-free Home educational materials to AAAAI physician members;
- American Association for Respiratory Care to educate respiratory therapists and asthma patients about asthma and indoor environmental management through five participating emergency departments;
- National Association of School Nurses to develop a training manual for school personnel, titled "Managing Asthma Triggers: Keeping Students Healthy"; and
- National Council of La Raza (NCLR) to develop community based secondhand smoke and asthma projects targeted to Hispanic populations across the country.

³ The Advertising Council is a private, nonprofit organization, which has been the leading producer of public service communication programs in the United States since 1942.

355 Other EPA partners have included the following organizations: 356 American Lung Association; 357 Asthma and Allergy Foundation of America; Asthma and Allergy Network * Mothers of Asthmatics; 358 359 Bureau of Primary Health Care; Children's Hospital of Philadelphia; 360 In-Home Asthma Education and Management; 361 362 National Academy of Sciences; and 363 San Francisco County Department of Health. 364 In 1999, EPA has created the Indoor Air Quality Tools for Schools (IAQ TfS) Program. 365 This program helps school administrators maintain a healthy environment in school buildings by identifying, correcting, and preventing indoor air quality problems. The IAQ TfS Program has 366 367 created resources for school administrators, such as a tool kit that with checklists, videos, sample 368 memos and policies, and a recommended management plan. An IAQ TfS National Symposium 369 has been each year held since 1999. The annual symposium gathers representatives from schools, 370 children advocacy groups, and health organizations to discuss indoor air quality as it relates to 371 schools. 372 EPA is supporting the Environmental Council of the States (ECOS) and the Association 373 of State and Territorial Health Officials (ASTHO) to develop and implement a national action 374 agenda to reduce environmental triggers of childhood asthma. 375 High-level environment and health officials from 39 states and Guam met in 376 August 2001 to establish a vision and goals for the action agenda. 377 In 2002, EPA convened four regional meetings to develop specific recommendations for environmental data and asthma surveillance, home indoor 378 379 environments, schools and child care settings, and outdoor environments. A national working group comprised of state environment and health officials 380 381 drafted a working action agenda from the recommendations. 382 EPA issued a request for proposals for states to implement portions of the action agenda. 383 384 ECOS and ASTHO plan to issue a joint policy statement reflective of the action 385 agenda.

To date the process has involved more than 250 people from 41 states, the Federal Government,

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and other stakeholder groups.

EPA also has developed publications, public service announcements, and resources that include:

- EPA's Asthma Newsletter;
- The brochure "Clear Your Home of Asthma Triggers: Your Children Will Breathe Easier" that includes recommendations on secondhand smoke, dust mites, pets, mold, and pests;
- An Asthma Speaker's Kit that includes a slide show presentation about asthma and asthma triggers;
- The video"Health at Home: Controlling Asthma Triggers"; and
- A public service announcement called "My Mom's My Hero" for television and radio that is designed to motivate mothers who smoke to make their homes smoke-free for the sake of their children.

Ambient Air Quality

Since 1998, EPA has taken several actions regarding ambient air quality that address childhood asthma, including developing and implementing a voluntary air toxics reduction program, issuing guidance documents, and conducting research activities. EPA also is addressing the risks to children in re-examining the particulate matter and sulphur dioxide standards. These activities are described below.

In March 2001, EPA launched a community-based air toxics voluntary reduction program called the Cleveland Air Toxics Pilot Project. The project goals were to quickly reduce air toxics, build capacity within the community to sustain reduction efforts over time, and create a model that can be replicated in other communities across the country. The project leverages both EPA and community resources to implement projects that will reduce toxics in ambient and indoor air. As of the spring of 2003, the project has exceeded its expectations and has begun to demonstrate reductions in air toxics levels.

On October 31, 2002, EPA issued the Asthma Research Strategy to guide the planning of EPA research efforts addressing the significant issues of exposures, effects, risk assessment, and risk management of environmental pollutants relevant to asthma. In recognition of its responsibility to set standards that protect susceptible populations such as asthmatics, the Asthma Research Strategy discusses future research efforts aimed at addressing the following issues:

• Factors contributing to the induction and exacerbation of asthma (e.g., combustion-related products, bioaerosols, and air toxics);

Susceptibility factors contributing to asthma (e.g., genetics, health status,
 socioeconomic status, residence and exposure history, and lifestyle and activity
 patterns); and

 Risk assessment and risk management of environmental pollutants linked to asthma.

The Asthma Research Strategy highlights significant information gaps in each of these areas, prioritizes the research needs, and proposes advisory guidelines indicating how available resources can advance scientific knowledge and control environmental factors that contribute to the prevalence and severity of asthma.

EPA is taking several actions regarding particulate matter. For example, EPA's Office of Research and Development (ORD) organizes and cosponsors the Inner City Asthma Study to assess the role of particulate matter exposures on asthma in children. On April 1, 2003, EPA issued its latest guidance to assist states and tribes in identifying and delineating areas of attainment and non-attainment for fine particulate matter (i.e., PM 2.5). EPA has published other guidance documents and has supported voluntary measures for stationary sources in its effort to help states and tribes meet the PM 2.5 standard.

ORD's National Center for Environmental Research (NCER) is funding research projects on children's health issues including several regarding particulate matter and asthma. NCER's STAR Program established five centers for airborne particulate matter research in 1999. These centers are located in major research universities across the country and will advance the understanding of particulate matter health effects through study focused on exposure, dosimetry and modeling, toxicology, and epidemiology. NCER Star grants also have been given to smaller individual research projects outside the PM Research Centers.

EPA has a three-pronged approach to reducing diesel emissions, which contain PM that can be an asthma trigger: emission standards for offroad diesel engines, the Clean School Bus USA initiative, and the highway truck rule.

- Offroad Diesel Engines. On May 23, 2003, EPA proposed new emissions standards for certain nonroad diesel engines that will reduce PM emissions by more than 90 percent (68 FR 28357). The reduction of PM emissions will benefit children, who are more susceptible to diesel pollution than adults are.
- The Clean School Bus USA Initiative has three goals: (1) to encourage policies and practices to eliminate unnecessary public school bus idling, (2) to upgrade or retrofit buses that will remain on the road with better emission control technologies and/or fueling them with cleaner fuels, and (3) to replace the oldest buses with new buses.
- **Highway Truck Rule.** EPA promulgated the Control of Air Pollution From New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards and Highway Diesel

45 <i>7</i> 458 459	The emissions requirements will begin to take effect in the model year 2007 and are projected to decrease PM emissions levels by 90 percent below 2001 levels.		
460 461 462 463	EPA has continued its review of the National Ambient Air Quality Standards (NAAQS) for SO ₂ that was initiated in 1994. EPA is pursuing five ongoing activities "to characterize and address five minute peak SO ₂ levels that may pose risk to sensitive individuals with asthma" (66 FR 1665). These five activities are:		
464 465	•	Working with states to facilitate certification of SO ₂ monitoring data and obtain related information;	
466	•	Developing guidance on monitoring five-minute SO ₂ concentrations;	
467 468	•	Obtaining additional five-minute SO_2 air quality monitoring data in coordination with states and industry monitoring activities;	
469	•	Taking final action on the proposed intervention level program; and	
470 471	•	Responding to the remand of EPA's 1996 SO ₂ National Ambient Air Quality Standard decision.	